WILDLIFE MANAGEMENT AND RESEARCH NOTES

INDIANA DIVISION OF FISH&WILDLIFE

No.	Author	Date
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	Title: 2009 Spring Northern Bobwhite Whistle Count Survey	

Abstract: *Spring whistle counts have been conducted annually throughout Indiana since 1947 (except 1958-1976) to assess changes in bobwhite abundance. The number of whistling quail was counted at 15 stops along 77 routes in 2009. Data were only included in the analysis if routes were surveyed in both 2008 and 2009, and at least 1 quail was recorded in those years. Considering only these routes (n = 68), the statewide mean number of bobwhites heard per survey stop in 2009 ($\bar{x}$ =0.67 ± 0.07) was significantly different (P = 0.02) from the number heard in 2008 ($\bar{x}$ =0.79 ± 0.09). When management regions were examined, indices generally did not differ between years (P > 0.16) except for the southeast-west region which declined 24.7% (P = 0.04). When we examined Bird Conservation Regions (BCR) in Indiana, we found a significant decline (-24.8%) in bobwhites heard per stop in BCR 24 – Central Hardwood (P = 0.01).*

Project #: 300FW0BIRD07000 Activity # BIRD521

The northern bobwhite is widely distributed throughout eastern North America and Mexico and is one of the most important game birds in the southern and mid-western United States. In Indiana, there are approximately 20,000 quail hunters that annually harvest nearly 30,000 birds. To monitor the bird's annual abundance, the Indiana Division of Fish and Wildlife conducts roadside counts of whistling bobwhites each spring to monitor changes in population abundance. Survey results are used to formulate management priorities, set harvest regulations, and evaluate habitat improvement programs.

Methods

The Indiana Division of Fish and Wildlife conducts road-side counts of whistling bobwhites each spring to monitor changes in population abundance. These counts have been conducted annually since 1947 with a lapse between 1958 and 1976 due to personnel issues. Currently, 85 routes are established across 83 counties and are surveyed during the month of June. Observers record the number of quail heard whistling during 3 minute periods at 15 different stops along each route. The routes are 15 miles in length and listening stops are spaced at approximately 1-mile intervals along each route. Counts start at sunrise and are not conducted during precipitation events or when winds exceeded 12 mph. Only data from routes surveyed in both years where at least 1 quail was recorded were used to assess annual changes in the bobwhite breeding population. A paired t-test was used to compare indices of abundance between 2008 and 2009 within each of Indiana's 4 bobwhite management regions (Figure 3) and 3 BCR regions (Figure 4).

Results

In 2009, a total of 77 routes were surveyed in 75 counties between 8 June and 26 June. During 2008 and 2009, only 68 routes in 66 counties were conducted in both years and recorded at least 1 quail, and data from only these routes were used to draw statistical comparisons between indices of bobwhite abundance.

Statewide, the number of bobwhites heard per stop in 2009 ($\bar{x}$ = 0.67 ± 0.07) was significantly different (P = 0.02) from the number heard per stop in 2008 ($\bar{x}$ = 0.79 ± 0.09; Table 1). Regionally, the number of bobwhites heard per stop in 2009 did not differ *(P* > 0.16) from the number heard in 2008 within 3 of the 4 physiographic regions of the state (Table 1); however, the number of quail heard per stop in the Southeast-west region had changed significantly(*P* = 0.04), declining 24.7%. In 2009, bobwhite trends were also examined by Bird Conservation Regions (BCR) in Indiana (Figure 3). In BCR 22 (Eastern Tallgrass Prairie) and BCR 23 (Prairie Hardwood Transition), the number of bobwhites heard per stop in 2009 did not differ *(P* > 0.33) from the number heard in 2008 (Table 2). However, we found a significant decline (-24.8%; P = 0.01) in bobwhites heard per stop in BCR 24 (Central Hardwood).

Discussion

The 0.97 bobwhites heard per stop for the southeast-west management region is the lowest level for that region since 1980, and the 24.7% decline is the largest decline for that region since 1995. The significant decline in the number of bobwhites heard per stop in both the Southeast-west management region and the Central Hardwood Bird Conservation Region (BCR 24) can likely be attributed to significant flooding in June of 2008 (according to the state climate office, it was the 7th wettest June on record) which would have interfered with nesting and caused lower productivity. Making things worse, southern Indiana was hit hard by severe winter weather in January, with the largest snow storm since 1996 and several ice storms along the Ohio River. According to the state climate office, 80% of Indiana had a foot or more of snow at some point in January. Persistent ice and snow has shown to have a detrimental effect on bobwhite populations. In the past, bobwhite numbers in southern Indiana has rebounded remarkably well if suitable habitat has been maintained.

Statewide, long-term trend data continues to show that the northern bobwhite population remains well below numbers observed in past decades in Indiana's 4 physiographic-quail survey management regions (Figure 1) and 3 bird conservation regions (Figure 2). The severe winter weather of the late 1970s took a horrific toll on Indiana's bobwhite population. However, if suitable habitat had been available following these weather events, the population would certainly have recovered. Changes in federal farm programs, along with changes in farming practices, were the primary reasons that the population did not recover fully after those severe winters. In fact, Indiana's bobwhite population had already begun to decline prior to the winter storms of 1978 and 1979 due to these same reasons (Figure 2). In the late 1960s and early 1970s there was upwards of 4 million acres of farmland enrolled in USDA land retirement programs. The number of idled acres in Indiana began to decline in the mid-1970s due to changes in USDA programs. The severe winter weather in the late 1970s only accelerated the bobwhite's decline and the continued loss of habitat following those winters is the primary reason the population has not been able to recover. Currently, little more than 295,500 acres of farmland are idle across the state through the Conservation Reserve Program (CRP). This equates to more than a 90% loss of potential game bird habitat when compared to the late 1960s and early 1970s.

However, Indiana landowners can help create suitable habitat for bobwhites by taking advantage of some current federal programs including the Continuous Conservation Reserve Program (CCRP) administered by the USDA Farm Service Agency. There are 3 CCRP practices in particular that are available to Indiana landowners and can create a noticeable benefit for Indiana's upland game: 1) CP-21 – filter strips, 2) CP-33 – upland wildlife buffers, and 3) CP38 – State Acres for Wildlife Enhancement (SAFE). These conservation practices provide essential nesting cover for quail and other game birds while lessening erosion and improving water quality. For more information about these and other federal programs, contact your local USDA service center. The Indiana Division of Fish and Wildlife also has programs that can provide landowners with support and funds to establish and/or maintain game bird habitat. These programs include the Wildlife Habitat Cost-Share Program, the Game Bird Habitat Development Program, and the Quail Habitat Incentives Program. For information about these programs, contact your local district biologist or visit: http://www.in.gov/dnr/fishwild

Table 1. Number of northern bobwhites heard per stop ($\bar{x}$ ± SE) along 68 paired survey routes within Indiana's 4 bobwhite management regions, 2008-2009.

		Mean Bobwhites Heard Per Survey Stop			
Mgmt Region	*n* [a]	2008	2009	% Change	*P*
Statewide	68	0.79 ± 0.09	0.67 ± 0.07	-15.9%	0.02
North	8	0.26 ± 0.18	0.41 ± 0.23	21.3%	0.17
Central	27	0.50 ± 0.08	0.44 ± 0.09	-10.9%	0.21
South-central	14	0.79 ± 0.23	0.63 ± 0.14	-19.3%	0.27
Southeast-west	19	1.29 ± 0.18	0.97 ± 0.14	-24.7%	0.04

[a] Includes only non-zero routes surveyed in both 2008 and 2009.

Table 2. Number of northern bobwhites heard per stop ($\bar{x}$ ± SE) along 68 paired survey routes within Indiana's 3 bird conservation regions, 2008-2009.

		Mean Bobwhites Heard Per Survey Stop			
BCR Region	*n* [a]	2008	2009	% Change	*P*
Statewide	68	0.79 ± 0.09	0.67 ± 0.07	-15.9%	0.02
BCR 22 - Eastern Tallgrass Prairie	32	0.53 ± 0.08	0.51 ± 0.09	-3.2%	0.69
BCR 23 - Prairie Hardwood Trans	4	0.52 ± 0.17	0.68 ± 0.28	32.3%	0.33
BCR 24 - Central Hardwood	32	1.09 ± 0.15	0.82 ± 0.11	-24.8%	0.01

[a] Includes only non-zero routes surveyed in both 2008 and 2009.

Figure 1. Mean number of northern bobwhite heard at each survey stop within Indiana's four bobwhite management regions, 1947-2009. No surveys were conducted from 1958-1976.

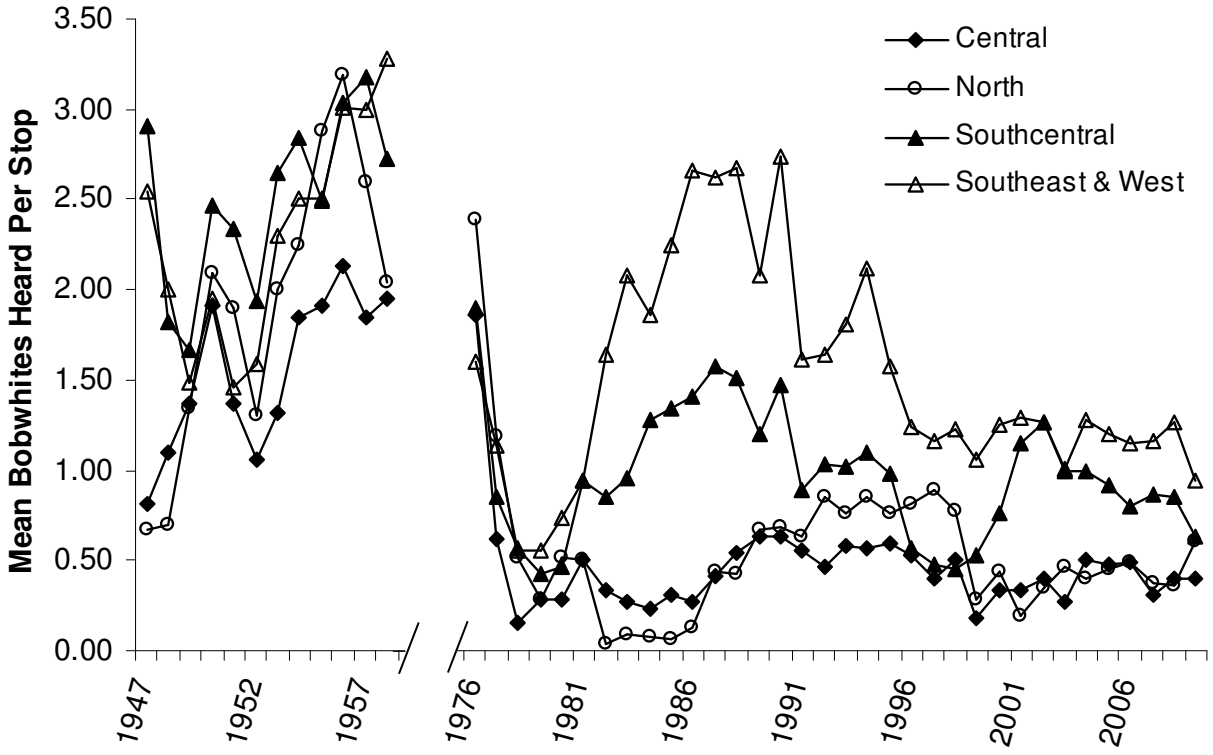

Figure 2. Mean number of northern bobwhite heard at each survey stop within Indiana's three bird conservation regions (BCR), 1947-2009. No surveys were conducted from 1958-1976.

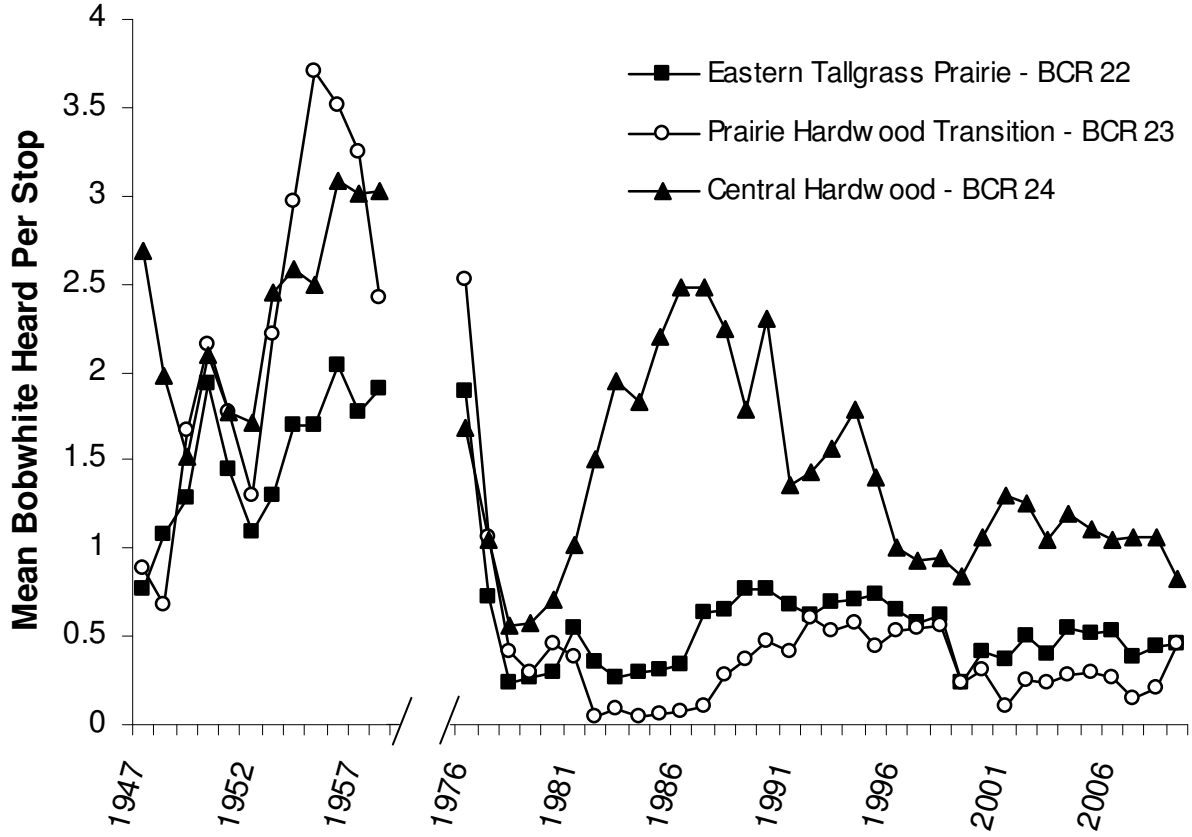

Figure 3. Map illustrating the counties included in each of Indiana's 4 northern bobwhite survey regions. The survey regions approximately correspond to the physiographic regions of Indiana described by the U.S. Fish and Wildlife Service.

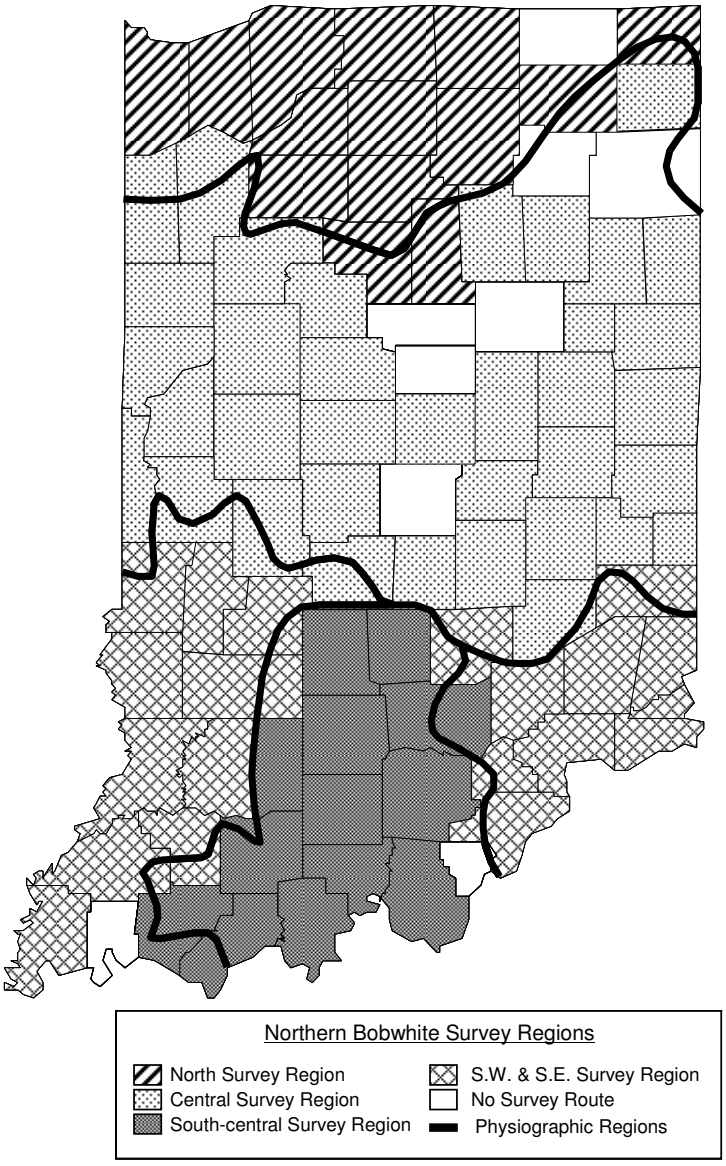

Figure 4. Map illustrating the 3 bird conservation regions (BCR) within the state of Indiana. BCR are ecologically defined units that provide a consistent spatial framework for bird conservation across North American landscapes under the North American Bird Conservation Initiative (Rich et al. 2004).